

## Significant Figures Practice Problems

1. Convert each of the following into the correct scientific notation form.

- |                                    |                                      |                                  |
|------------------------------------|--------------------------------------|----------------------------------|
| a) 3427 $3.427 \times 10^3$        | b) 0.00456 $4.56 \times 10^{-3}$     | c) 123,453 $1.23453 \times 10^5$ |
| d) 172 $1.72 \times 10^2$          | e) 0.000984 $9.84 \times 10^{-4}$    | f) 0.502 $5.02 \times 10^{-1}$   |
| g) 3100.0 $3.1000 \times 10^3$     | h) 0.0114 $1.14 \times 10^{-2}$      | i) 107.2 $1.072 \times 10^2$     |
| j) 0.0000455 $4.55 \times 10^{-5}$ | k) 2205.2 $2.2052 \times 10^3$       | l) 30.0 $3.00 \times 10^1$       |
| m) 0.982 $9.82 \times 10^{-1}$     | n) 0.0473 $4.73 \times 10^{-2}$      | o) 650.502 $6.50502 \times 10^2$ |
| p) 3.03 $3.03 \times 10^0$         | q) 20.4 $2.04 \times 10^1$           | r) 1.29 $1.29 \times 10^0$       |
| s) 0.00565 $5.65 \times 10^{-3}$   | t) 1362205.2 $1.3622052 \times 10^6$ | u) 450.0 $4.500 \times 10^2$     |
| v) 100.0 $1.000 \times 10^2$       |                                      |                                  |

2. Determine the number of significant figures in each of the following:

- |                             |                         |                            |
|-----------------------------|-------------------------|----------------------------|
| a) 3427 4                   | b) 0.00456 3            | c) 123,453 6               |
| d) 172 3                    | e) 0.000984 3           | f) 0.502 3                 |
| g) 4.200 $\times 10^2$ 4    | h) 6.14 $\times 10^4$ 3 | i) 107.2 4                 |
| j) 0.0000455 3              | k) 2205.2 5             | l) 3.85 $\times 10^{-2}$ 3 |
| m) 9.71 $\times 10^{13}$ 3  | n) 0.0473 3             | o) 650.502 6               |
| p) 6.03 $\times 10^{-1}$ 3  | q) 9.06 $\times 10^5$ 3 | r) 1.29 3                  |
| s) 0.00565 3                | t) 1362205.2 8          | u) 7.500 $\times 10^3$ 4   |
| v) 2.000 $\times 10^{-3}$ 4 | w) 546,000 3            | x) 546,000 3               |

3. Convert each into standard form.

- |                             |                                  |
|-----------------------------|----------------------------------|
| 1.56 $\times 10^4$ 15600    | 3.69 $\times 10^{-6}$ 0.00000369 |
| 2.59 $\times 10^5$ 259,000  | 1.369 $\times 10^{-2}$ 0.01369   |
| 2.59 $\times 10^3$ 2590     | 7.369 $\times 10^5$ 736,900      |
| 5.6 $\times 10^{-2}$ 0.056  | 2.09 $\times 10^{-3}$ 0.00209    |
| 6.9 $\times 10^4$ 69,000    |                                  |
| 4.59 $\times 10^{-1}$ 0.459 |                                  |

4. Calculate the following. Give the answer in correct number of significant figures.

a)  $43.7 - 2.341$

$= \underline{41.359} = \underline{41.4}$

b)  $17.6 + 2.838 + 2.3 + 110.77$

$= \underline{133.508} = \underline{133.5}$

c)  $19.6 + 58.33 - 4.974$

$= \underline{72.956} = \underline{73.0}$

d)  $5.99 - 5.572$

$= \underline{0.418} = \underline{0.42}$

e)  $0.004 + 0.09879$

$= \underline{0.10279} = \underline{0.103}$

f)  $1239.3 + 9.73 + 3.42$

$= \underline{1252.45} = \underline{1252.5}$

g)  $2.4 - 1.777$

$= \underline{0.623} = \underline{0.6}$

h)  $532 + 7.3 - 48.523$

$= \underline{490.777} = \underline{491}$

5. Calculate the following. Give the answer in number of significant figures.

a)  $5.01 \times 10^5 \div 7.8 \times 10^2$

$= \underline{642.3077} = \underline{6.4 \times 10^2}$   
or  
 $\underline{640}$

b)  $4.005 \times 74 \times 0.007$

$= \underline{2.07459} = \underline{2}$

c)  $453 \div 2.031$

$= \underline{223.04284} = \underline{223}$

d)  $27.5 \times 1.82 \div 100.04$

$= \underline{0.5002999} = \underline{0.500}$

e)  $2.290 \times 10^6 \div 6.7 \times 10^4$

$= \underline{34.1791} = \underline{34}$

f)  $1.54 \times 0.03060 \times 0.69$

$= \underline{0.032516} = \underline{0.033}$   
or  
 $\underline{3.3 \times 10^{-2}}$

g)  $9.15 \div 4.9070$

$= \underline{1.86468} = \underline{1.86}$

h)  $89.3 \times 77.0 \times 0.08$

$= \underline{550.088} = \underline{6 \times 10^2}$   
or  
 $\underline{600}$

6. Calculate the following. Give the answer in number of significant figures.

a)  $(24.6681 \times 2.38) + 332.58$

$$= \underline{58.710078} + 332.58$$

$$= \underline{391.2901} = \underline{391.3}$$

b)  $(85.3 - 21.489) \div 0.0059$

$$= \underline{63.811} \div 0.0059$$

$$= \underline{10815.4237} = 1.1 \times 10^4$$

c)  $(512 \div 986.7) + 5.44$

$$= \underline{0.5189014} + 5.44$$

$$= \underline{5.958901} = \underline{5.96}$$

d)  $(2.87 \div 48.533) + 144.99$

$$= \underline{0.05913502} + 144.99$$

$$= \underline{145.04913502} = \underline{145.05}$$

e)  $[(1.7 \times 10^6) \div (2.63 \times 10^5)] + 7.33$

$$= \underline{6.463878} + 7.33$$

$$= \underline{13.79388} = \underline{13.8}$$

f)  $(568.99 - 232.1) \div 5.3$

$$= \underline{336.89} \div 5.3$$

$$= \underline{63.56415} = \underline{64}$$

g)  $(9443 + 45 - 9.9) \times (8.1 \times 10^6)$

$$= \underline{9478.1} \times 8.1 \times 10^6$$

$$= \underline{7.67726 \times 10^{10}} = \underline{7.7 \times 10^{10}}$$

h)  $(3.14 \times 2.4367) - 2.34$

$$= \underline{7.651238} - 2.34$$

$$= \underline{5.311238} = \underline{5.31}$$

1. The first part of the document is a letter from the President of the United States to the Congress, dated January 1, 1861. It is a very important document, as it sets out the President's policy for the new year. The President states that he is pleased to see the Congress assembled, and that he is confident that the country is in a good position to meet the challenges of the future. He also mentions the recent election of Abraham Lincoln as President, and expresses his confidence in the new administration.

2. The second part of the document is a report from the Secretary of the Treasury, dated January 1, 1861. It provides a detailed account of the financial state of the country at the beginning of the year. The report states that the country is in a sound financial position, with a strong credit rating and a healthy balance of payments. It also mentions the recent increase in the national debt, and expresses confidence that the government will be able to manage the debt effectively.

3. The third part of the document is a report from the Secretary of the Interior, dated January 1, 1861. It provides a detailed account of the state of the country's natural resources, including land, minerals, and wildlife. The report states that the country's natural resources are abundant and well-managed, and that the government is committed to protecting them for the benefit of future generations. It also mentions the recent discovery of gold in California, and expresses confidence that the country will continue to prosper through mining and other natural resource industries.